Claim 22 was rejected under 35 U.S.C. §112, second paragraph, as being indefinite for allegedly failing to have proper antecedent basis for the phrase "said second direction." Applicants submit that express antecedent basis can be found at line 5 of Claim 20. Accordingly, Applicants believe the basis of the rejection is obviated and withdrawal of the Section 112 rejection is requested.

Claims 1-5, 10-16, 20, and 22 have been rejected under 35 U.S.C. §102 as being anticipated by U.S. Patent No. 5,517,419 (Lanckton et al.). Claims 6-9, 17-19, 21, and 23 have been rejected under 35 U.S.C. §103 as being obvious over Lanckton et al. considered in combination with U.S. Patent No. 5,633,946 (Lachinski et al.). Applicants respectfully traverse these rejections for the reasons discussed below.

As recited in independent Claims 1, 6, 10, 12, 17, 20, and 21, the present invention relates to an image recording apparatus and method, and a computer medium with codes for implementing a method, for use where at least two image sensing means are mounted on a vehicle a known distance apart. As further recited in those claims, the present invention utilizes information concerning a time difference between images recorded using image sensing means at different positions, based on the known distance and a velocity of the vehicle. Due to this feature, exact information about time differences and positioning relationships between images from different image sensing means can be detected, irrespective of any changes in vehicle movement. As a result, a higher quality panoramic image can be synthesized.

In contrast, Lanckton et al. does not disclose or suggest recording or using information concerning a time distance based on a velocity of the vehicle. The time difference between cameras changes in dependence on a velocity of the vehicle. Since the system of Lanckton et al
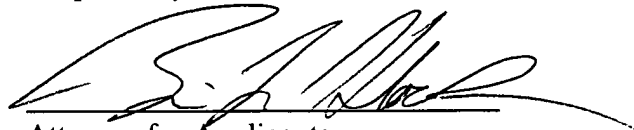
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does not consider variations in the velocity of the vehicle, the quality of a stereo image would degrade if a velocity of the vehicle changes.

Lachinski et al. also does not disclose or suggest at least the above-mentioned feature. Accordingly, Applicants submit that the present invention recited in the independent claims is patentable over the cited art, whether that art is considered individually or in combination.

In view of the foregoing, Applicants submit that this Amendment places the application in condition for allowance. Favorable reconsideration, entry of this Amendment, and an early Notice of Allowance are respectfully requested.

Applicants' undersigned attorney may be reached in our Washington, D.C. office by telephone at (202) 530-1010. All correspondence should continue to be directed to our address given below.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE TO THE CLAIMS

1. (Twice Amended) An image recording apparatus for recording images sensed by at least two image sensing means attached to a vehicle, comprising:

first image sensing means which is arranged to have an image sensing direction agreeing with a first direction of the vehicle;

second image sensing means which is arranged at a position separated a known distance from said first image sensing means to have an image sensing direction agreeing with a second direction different from the first direction; and

recording means for, when the vehicle travels in the first direction, associating first image data sensed by said first image sensing means with second image data sensed by said second image sensing means[,] and recording said first and second image data[,

wherein said first and second image data are sensed at different times from each other, and the] with information concerning a time difference based on [corresponds to] said known distance and a velocity of the vehicle.

6. (Twice Amended) An image recording apparatus for recording images sensed by at least two image sensing means attached to a vehicle, comprising:

first image sensing means which is arranged to have an image sensing direction agreeing with a first direction of the vehicle;

a plurality of cameras which are arranged at positions separated a known distance

from said first image sensing means to have image sensing directions agreeing with a plurality of

directions symmetrical about a second direction different from the first direction;

means for detecting a turn of the vehicle;

selection means for selecting the camera which points at a larger angle in a

counterclockwise or clockwise direction from said plurality of cameras depending on whether the

vehicle has turned clockwise or counterclockwise from the first direction; and

recording means for associating first image data sensed by said first image sensing

means with second image data sensed by the camera selected by said selection means, and

recording said first and second image data[,

wherein said first and second image data are sensed at different times from each

other, and the] with information concerning a time difference based on [corresponds to] said

known distance and a velocity of the vehicle.

10. (Twice Amended) An image database for generating a database used for

building a three-dimensional image space from image sequences sensed by a plurality of image

sensing means attached to a vehicle after acquisition of image data, comprising:

a first reader for reading data from a first image data memory recorded by first

image sensing means pointed in a first direction;

a second reader for reading data from a second image memory recorded by second

image sensing means which is arranged at a position separated a known distance from said first

image sensing means to point in a second direction different from the first direction;

a third reader for reading data from a third memory which records a moving

position and traveling direction of the vehicle; and

means for associating image data read by said first reader, and image data read by

said second reader based on time duration information [that corresponds to] based on the known

distance and a velocity of the vehicle, with each other when traveling direction data read by said

third reader indicates that the vehicle is traveling substantially straight.

12. (Twice Amended) An image recording method of recording images sensed by

at least two image sensing means attached to a vehicle, comprising the steps of:

arranging first image sensing means to have an image sensing direction agreeing

with a first direction of the vehicle;

arranging second image sensing means at a position separated a known distance

from said first image sensing means to have an image sensing direction agreeing with a second

direction different from the first direction; [and]

associating, when the vehicle travels in the first direction, first image data sensed

by said first image sensing means with second image data sensed by said second image sensing

means[,] and

[wherein] <u>recording</u> said first and second image data, [are] sensed at different times from each other, and the time difference [corresponds to] <u>based on</u> said known distance <u>and a velocity of the vehicle</u>.

17. (Twice Amended) An image recording method of recording images sensed by at least two image sensing means attached to a vehicle, comprising the steps of:

arranging first image sensing means to have an image sensing direction agreeing with a first direction of the vehicle;

arranging a plurality of cameras at positions separated a known distance from said first image sensing means to have image sensing directions agreeing with a plurality of directions symmetrical about a second direction different from the first direction;

detecting a turn of the vehicle;

selecting the camera which points at a larger angle in a counterclockwise or clockwise direction from said plurality of cameras depending on whether the vehicle has turned clockwise or counterclockwise from the first direction; and

recording first image data sensed by said first image sensing means and second image data sensed by the selected camera in association with each other, <u>and information concerning a</u>

[wherein said first and second image data are sensed at different times from each other, and the] time difference [corresponds to] <u>based on</u> said known distance <u>and a velocity of the vehicle</u>.

20. (Twice Amended) A recording medium of a computer program which makes a computer execute control for recording images sensed by first image sensing means which is arranged to have an image sensing direction agreeing with a first direction of a vehicle, and second image sensing means which is arranged at a position separated a known distance from said first image sensing means to have [an] a second image sensing direction different from the first direction, said medium recording:

first program code means for, when the vehicle travels in the first direction, recording first image data sensed by said first image sensing means and second image data sensed by said second image sensing means in association with each other based on time duration information [that corresponds to] based on the known distance and a velocity of the vehicle.

21. (Twice Amended) A recording medium of a computer program which makes a computer execute control for recording images sensed by first image sensing means which is arranged to have an image sensing direction agreeing with a first direction of a vehicle, a plurality of cameras which are arranged at positions separated a known distance from said first image sensing means to have image sensing directions agreeing with a plurality of directions symmetrical about a second direction different from the first direction, said medium recording:

first program code means for detecting a turn of the vehicle;

second program code means for selecting the camera which points at a larger angle in a counterclockwise or clockwise direction from said plurality of cameras depending on whether the vehicle has turned clockwise or counterclockwise from the first direction; and

third program code means for recording first image data sensed by said first image

sensing means, and second image data sensed by the selected camera based on a time duration

[that corresponds to] based on the known distance and a velocity of the vehicle, with each other.

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